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How the COVID-19 pandemic is teaching us to tackle the climate crisis

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Abstract: The COVID-19 pandemic has changed our everyday life in an unprecedented way and has made us very conscious about the vulnerability of our modern society. It has demonstrated an increasingly critical need for systemic transformation, based on the principles of sustainability and resilience [1, 2]. As a “stress test” [3] this pandemic outbreak and ongoing crisis has already taught us several important lessons that should be considered for dealing with climate change, a fundamental challenge and risk to humanity for the 21st century and beyond.

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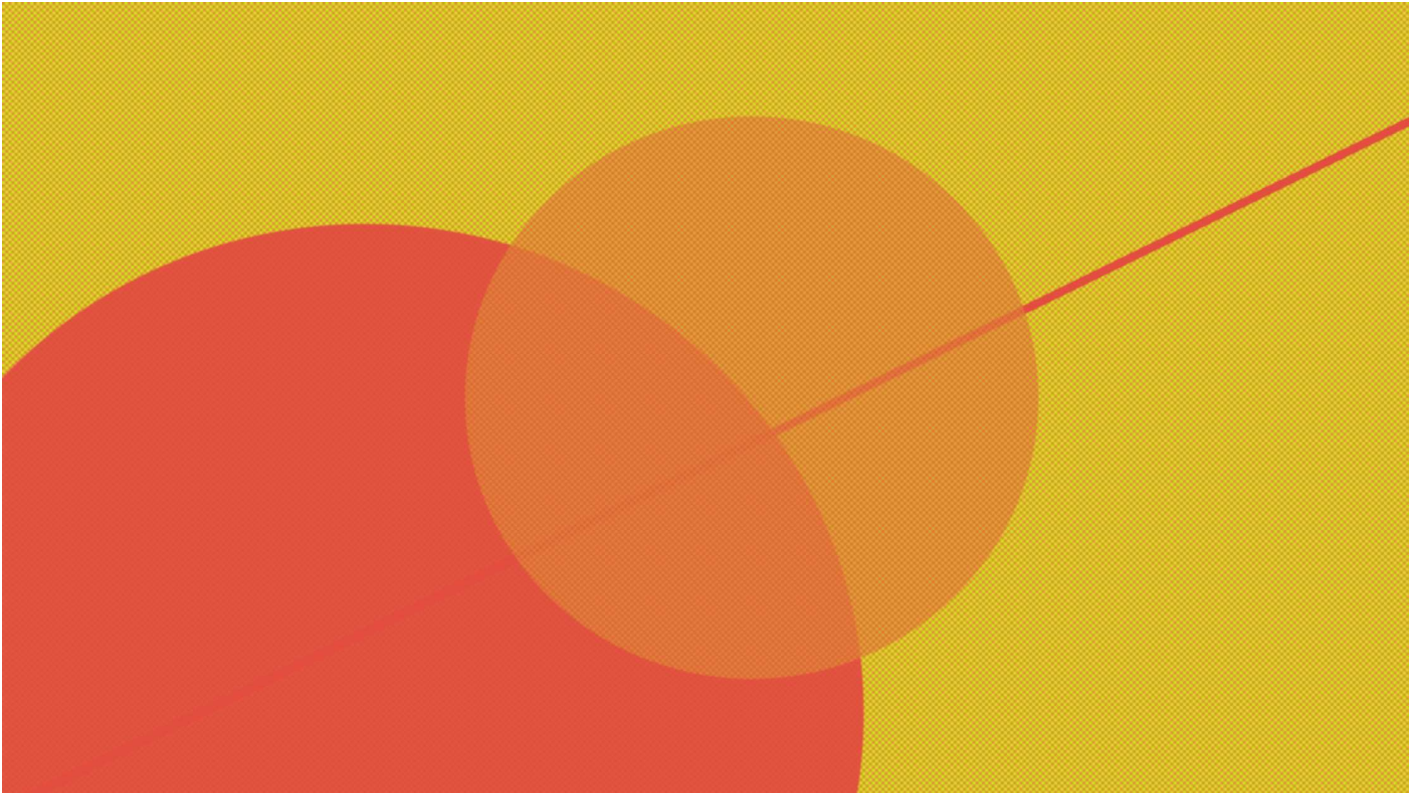
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How the COVID-19 pandemic is teaching us to tackle the climate crisis

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The COVID-19 pandemic has changed our everyday life in an unprecedented way and has made us very conscious about the vulnerability of our modern society. It has demonstrated an increasingly critical need for systemic transformation, based on the principles of sustainability and resilience [1, 2]. As a “stress test” [3] this pandemic outbreak and ongoing crisis has already taught us several important lessons that should be considered for dealing with climate change, a fundamental challenge and risk to humanity for the 21st century and beyond.

Since its first appearance in December 2019 in the Chinese city of Wuhan the severe acute respiratory syndrome Coronavirus 2 (SARS-CoV-2) [4] has spread to more than 200 countries and territories around the world, causing – as of August 14th 2020 – around 20.7 million confirmed infections, including more than 751,000 reported deaths [5]. The real numbers are probably substantially higher as unreported cases remain particularly high in countries with weak state welfare and institutions. To date the COVID-19 pandemic has had a strong impact on social and economic life [6, 7, 8, 9], stretching from physical isolation and social distancing to the enhancement of global famines affecting 265 million people [10], and to the largest global economic recession since the Great Depression in the 1930s [11]. It has been

labelled as a serious threat to humanity [12]. Although the exact origin of COVID-19 is still subject of intense debate (for a compilation of articles that appeared online and in print, see the Geneva Environment Network), it is now clear that the virus is part of the zoonotic diseases, i.e. it is passed from animals to humans [13]. There is also good consensus that the origin of this zoonotic transmission lies in human invasions into natural habitats, due to factors such as population and economic growth, unsustainable land use practices and degradation [14], deforestation [15, 16], biodiversity reduction [17] and illegal wildlife trade [18]. Many commentators, especially representatives of environmental or ecology groups, and even the Secretary General of the United Nations, see in the appearance of COVID-19 an unprecedented and clear warning shot [19, 20], about the consequences of the ongoing degradation and destruction of the natural environment and biodiversity [21]. Among the pre-conditions or factors that allowed the worldwide spreading of the COVID-19 pandemic we find the almost unlimited and unrestricted mobility of people (especially at the very beginning of its dispersion), poor health systems, ignorance or downplaying of the threats, inappropriate or delayed decisions by some political authorities [22] and a set of adverse socio-economic settings in some countries (e.g. high proportion of informal economy) [23] that inhibit strict lockdown conditions over several months.



Among the most vulnerable population

stratum to COVID-19 infections are elderly people, especially the ones working in sectors with “face-to-face” contact – Market-woman with mask in Abancay (Aurimac, Peru). Photo: Jaime J. Valenzuela Trujillo.

The impacts generated by the COVID-19 pandemic and associated lockdown conditions are manifold. Here we summarize them using the three pillars of sustainability:

a) **environmental** (on the short term):

locally less traffic [24, 25, 26]; less greenhouse gas (GHG) emissions [27, 28, 29, 30]; better air quality [31, 32, 33]; species [34, 35] and ecosystem recovery [36], contrasted by increased, illegal deforestation and poaching (as a consequence of less governmental control during lockdown) [37, 38, 39, 40]; interruption of environmental monitoring projects [41, 42], causing data gaps; impacts on the “2020 super year of biodiversity” [43] and postponement of several policy work schedules, such as the COP26 [44] and the draft reporting deadlines of the Intergovernmental Panel on Climate Change (IPCC) [45].

b) **social**:

immediate, high societal awareness [46, 47, 48]; physical and social distancing; increase in unemployment rate [49]; forced, domestic migration (from the urban to the rural areas) [50, 51, 52]; changed working conditions (virtual, home-office).

c) **economic**:

high impact on sectors that depend on travelling (e.g. business and tourism [53]); (partly) broken food supply-chains [54] (from the rural to the urban areas).

In the context of the climate crisis, some of the above-mentioned impacts can have positive effects for mitigating or adapting to climate change, others may exacerbate existing barriers. Without any doubt, and alike climate change, the COVID-19 pandemic is affecting everyone [55], although at different levels, pace and magnitude. It is therefore important to analyse and monitor in detail how this pandemic is being confronted and managed by the different governments and in their specific environmental and socio-cultural context. Apparently,

governments have learned to deal with a new risk (crisis caused by the COVID-19 pandemic) and were forced to impose some top-down measures (lockdown, restrictions of fundamental rights, mandatory use of masks, social distancing, etc.) that were not popular among citizens, but were widely accepted under the immediate threat by the virus. It has been repeatedly commented that the climate crisis is not tackled with the same emphasis as the pandemic so far, actions are slower and taken with less urgency even though the climate crisis is considered a more fundamental threat to humanity.[56]

Regarding the interactions that might exist between COVID-19 and climate there is so far no evidence, based on the already existing peer-reviewed publications, that would demonstrate a direct influence of the climate on the spread of COVID-19. For instance, the first publications and assessments [57, 58, 59] for which a simple correlation between temperature and the number of COVID-19 cases were made, are not reliable.[60] But there is growing evidence for an indirect relation that e.g. (changes in) weather alters human behaviours, which could lead to a higher likelihood of COVID-19 transmission.[61, 62] A remarkable trend in mountain regions (Nepal in the Himalayas and Bolivia and Ecuador in the Andes) that has been scientifically documented is the resilience of mountain people to COVID-19 infections, which is thought to be related to the physical-genetical adaptation (hypoxia and down-regulation of the ACE2 enzyme, which is the main binding target of COVID-19) to high altitude.[63, 64] Growing evidence for this hypothesis is coming e.g. from Peru which is one of the countries with an intensive COVID-19 testing effort (2.1 million tests performed until 21 July 2020) where there is a trend of higher infection and morbidity rates in the urban centres of the lowlands (e.g. Iquitos, Pucallpa) and at the coast (e.g., Chiclayo, Lima, Arequipa) than in the Andes (e.g. Cusco, Ayacucho).[65] Furthermore, some studies suggest that high levels of ambient ozone (O₃) may impact COVID-19 in high altitude mountain environments.[66]

In general, we can portray the interactions between the COVID-19 pandemic and the climate crisis as compound impacts.[67] These are risks that have to be taken into consideration in national emergency programs and in disaster risk management. Recent examples are the intense and extensive 2019/2020 bushfires and forest fires in Australia and the Amazon basin (Brazil, Bolivia), respectively, that are considered to have a relation to climate change and were directly followed by the COVID-19 pandemic. While rich and developed countries like Australia may be sufficiently prepared to respond with the necessary crisis management, others might not (see, e.g., Niger and Chad [68], or India / Bangladesh) [69]. A worst-case scenario is when both impacts (climate change related and COVID-19) develop at the same time, like e.g. the long-lasting drought, combined with a locust invasion, and the arrival and

spreading of COVID-19 epidemic at the horn of Africa (Ethiopia and Somalia) [70, 71] or the recent floods in Nepal [72]. Human populations with limited resources and capacities tend to be more vulnerable to such exceptional crisis [73], and as such COVID-19 is exacerbating existing inequalities [74], see e.g., the specific case of people of colour and other minorities in the U.S. [75], or the cases of India [76] and Peru [77]. The isolation of some populations (especially some indigenous communities, e.g. in the Amazon) can be an advantage, as long as the pandemic stays outside, but could be a death sentence for whole indigenous communities once infected.[78, 79, 80] Other latent risks of the COVID-19 spread are related to the food supply-chains (missing inputs, labour and transport) for the big urban areas, making their inhabitants more vulnerable than in rural areas [81, 82]; for the latter, see, e.g. the case of the Kachchh's nomadic pastoralists from Gujarat (India) [83]. The perception and experience of higher vulnerabilities in urban areas could potentially trigger migration from the cities to the rural areas and, as a consequence, lead to higher pressures and accelerated land-use change dynamics (including deforestation, drainage of wetland areas, etc.) in the rural areas, which most probably would exacerbate the climate crisis. In the same line stands the risk of intensified mining or extractive industrial activities (based on a reduction of environmental regulations) [84, 85], as a consequence of the refunding of debt burdens that some low- and middle-income countries had to assume in the frame of the national COVID-19 emergency situation.[86] Other demands for national budget cuts could result in the postponement of innovative, sustainable and climate-friendly green-energy projects and climate change actions.[87, 88]



COVID-19 everyday scenes in Cusco city (Peru). Photos: Jazmín Lezama

But at the same time many of these risks can be transformed into long-term opportunities. [89, 90, 91, 92, 93, 94, 95], especially in countries with a long-term, strategic planning that is based on scientific evidence regarding climate change adaptation and mitigation. Among the opportunities, there are, e.g., a deeper consideration of Nature-based Solutions [96] (in order to increase the resilience of ecosystems), changing working conditions, using more frequently or exclusively virtual solutions (e-meetings instead of physical meetings that requires travelling and produces GHG) [97], renovation and diversification of the tourism

sector (towards more sustainability [98, 99, 100]), and changed politics at all levels (local, national, international / regional) [101, 102, 103], in favour of more sustainable solutions (e.g., car-free days, improved / less energy consuming material and food supply-chains [104, 105], agroecological production, etc.).[106]

Our current COVID-19 experiences are unprecedented in pace and magnitude in recent times so far. The above-mentioned examples show that there are important lessons already taken from the COVID-19 crisis that should be considered for the climate crisis, including the trade-offs of central government interventions on social and economic affairs versus democratic processes and individual freedom, or the tangible experience that all the systems (social, environmental, economic) are interconnected and that they have to be addressed through a holistic, social-ecological approach. The next pandemic is about to come and the climate crisis will not be tackled with masks, lockdown and economic injections. The post-pandemic recovery plans (under the motto “build back better” [107]) are an opportunity to redesign these systems as a whole, aiming for transformative change as a globally coordinated effort at all socio-political levels, in the framework for actions based on the 2030 Agenda for Sustainable Development and the Paris Agreement on Climate Change.

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